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Japan Report

(FOUO 3/81)



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POLITICAL AND SOCIOLOGICAL

JAPAN ISSUES INTERIM REPORT ON EVACUATION FROM IRAN, IRAQ

OW190531 Tokyo YOMIURI SHIMBUN in Japanese 18 Dec 80 morning edition p 2

[Text] The Foreign Ministry on 17 December issued an "interim report on evacuation and rescue activities for Japanese during the Iran-Iraq war." This report comes at a time when the Iran-Iraq war has brought the question of protecting overseas Japanese to the fore. It proposes that protection of Japanese overseas be regarded as part of Japan's comprehensive national security and that the government have its own aircraft ready at all times for use in an emergency evacuation.

According to the report, when the Iran-Iraq war broke out on 22 September, there were 1,735 Japanese in Iran and 4,110 in Iraq. As the conflagration spread, they were successively evacuated. As a result, by the end of November, their number had dwindled to 530 in Iran and 1,660 in Iraq.

In the early stages, the evacuation was marred by considerable confusion arising from Japanese working on construction projects wanting to return home as soon as possible, while the host countries wanted them to stay so that construction could be continued. As a result, evacuation of the Japanese was delayed. Japan was partially responsible for the hitch because it lacked measures to cope with this kind of emergency. The interim report points out the following two factors which impeded the evacuation: 1) Contacts between the Foreign Ministry and the embassies in the field were not as smooth as they should have been due to the disruption of communications. 2) There was confusion in mapping out evacuation routes and securing means of transportation.

For this reason, the interim report stresses the need to "clearly define the protection of overseas Japanese as part of the nation's comprehensive security policy." As concrete measures to implement this policy, the interim report calls for study of methods of evacuating overseas Japanese by government planes, installation of shortwave communication equipment in embassies, and conduct of paper exercises in dealing with crises by linking the Foreign Ministry to its field agencies overseas.

The idea of the government having its own aircraft for emergency use was once proposed during the days of the Fufuda cabinet in 1977 but was not adopted. Since the use of self-defense force planes is subject to constitutional restrictions, the interim report suggests that the government study the desirability of having its own aircraft exclusively for emergency use.

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ECONOMIC

'JAPAN TIMES' VIEWS ECONOMIC TEST AWAITING REAGAN

OW270109 Tokyo THE JAPAN TIMES in English 26 Dec 80 p 14

[Editorial: "A Test of Reagan's First 100 Days"]

[Text] The United States economy is considered so sick that some advisers to President-elect Ronald Reagan are prodding him to declare a national economic emergency as soon as he takes office. The action is compared to one launched by President Franklin D. Roosevelt at the start of the New Deal in 1933.

They urge that Mr Reagan request the Congress to debate and act expeditiously an emergency economic stabilization and recovery program in the first 100 days of his administration.

Whether the conditions of the economy warrant such emergency action or not is debatable, but it does make sense politically that Mr Reagan should come up with some dramatic measures to inspire confidence during the early days of his administration while he has still maximum political leverage.

Such measures should bring about some tangible change in the life of the average American who longs for a "new beginning" as promised by Mr Reagan during the campaign. They probably include the first installment of the three-year personal income tax cut (the so-called Kemp-Roth plan), incentives for businesses including depreciation speedup and unilateral administration actions to alleviate regulatory burdens and an across-the-board cut in government spending.

The objectives are to control inflation and revitalize the private sector. And for this purpose, budgetary restraints and tight money alone won't be enough. Mr Reagan plans to put an element of "supply side economics" in his program by injecting a pattern of vigorous growth in the policy package. He is not satisfied with the conventional method of curbing inflation by arresting the economy. The package is intended to spur production, employment and growth and, above all, to lower inflationary expectations. That part of the package most vulnerable to whims of economic winds would be one calling for a massive cut in personal income tax. This may prove highly inflationary unless accompanied by substantial spending cuts which will be by no means easy to achieve.

It is possible that Mr Reagan, for all his commitment to the Kemp-Roth plan, will be tempted to forego the personal income tax cut just as it was the case with Mr Carter in 1977 when he was forced to give up the \$50 rebate part of a stimulus package.

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If there is anything that best characterizes U.S. economic developments over the past four years, it is that the pull of inflationary forces proved stronger than recessionary ones. The Carter administration, far from being spendthrift, has consistently underestimated the strength of inflationary pressures, a costly mistake that contributed to its undoing.

The 9.9 percent plunge of the economy in the second quarter of 1980 can be considered an aberration caused by tight credit control the Federal Reserve Board (FRB) imposed on both consumers and businesses to curb their borrowings. A specter of hyperinflation left the FRB no other option. Once the credit squeeze was lifted after the threat of hyperinflation receded, however, the economy quickly bounced back to register a 2.4 percent growth in the third quarter. After all talks about signs of incipient recession, the fourth quarter growth has been estimated to have reached 4 percent. This took place in spite of resurgence of interest rates which saw the prime rate rise from 10.75 percent to 21.5 percent in a matter of four months.

Nevertheless, an overall picture of the present state of the economy still looks typical of the end of an expansion and the beginning of downturn. Sales of goods have slowed faster than production and as a result unwanted stocks have built up in factories and store shelves. New orders for goods have dropped sharply.

Businesses have been forced to borrow more money even at rates in excess of 20 percent from banks to allow them to carry added inventories. The Federal Reserve Board deliberately created a crunch to brake the rapid expansion in money and credit and wipe out expectations of more inflation. There has, however, been less of panicky reaction this time since the FRB unlike in March stopped short of a direct curb on credit.

Without going that far, the high rate of interest alone has effectively restrained the growth of money supply. Falling rates in the bonds market quickly led to a lower prime rate. The deflationary effect of the high interest rate policy seems less devastating in the latest instance than last spring. But it has done little so far to blunt inflation. Consumer prices kept advancing one percent a month for the past three months.

Much of today's inflation is built into the structure of the economy so that it does not lend itself to any quick fix. Only a sustained, multisided approach has any chance of success. Tight reins on money supply, cuts in government spending, and promotion of investment and productivity should go hand in hand.

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- ECONOMIC

'YOMIURI' VIEWS 1981 DRAFT BUDGET, RAPS TAX HIKES

- OW251130 Tokyo THE DAILY YOMIURI in English 23 Dec 80 p 2

[Editorial by Yomiuri Shimbun on 23 December: "Why Accent Tax Hikes"]

[Text] The Finance Ministry's draft budget for fiscal 1981 gives the clear impression that major tax increases have been given the priority over trimming government expenditures.

- The ministry intends to carry out a tax increase of an unprecedented 1,390 billion yen by boosting the corporation tax and all commodity taxes, including the liquor and motor vehicle tax. Moreover the government and liberal-democratic party reportedly plan to introduce a general excise tax of 3 trillion yen in estimated yield in fiscal 1982.

We do appreciate the decision to restrict the growth of general expenditures to 4.3 percent. But we are dissatisfied with the ministry's budget. It is unclear how much saving has been accomplished by cutting expenditures and how much effort was made in combining and abolishing subsidies, cutting administrative expenses and reducing the deficits of the Japanese national railways, the rice program and health insurance.

Pledge Appears Abandoned

However, it appears that the government has abandoned its promise to put its own fiscal house in order.

Although the determination to slash expenditures was timid, nevertheless vested interests are already complaining loudly and pressure groups are at work to reinstate budget cuts. We urge the Finance Ministry to resist such pressures and to study if there is room for even more trimming in the final budget.

The general account budget in the draft budget is 46,788.2 billion yen an increase of 9.9 percent over fiscal 1980's and the treasury loan and investment program is 19,063.8 billion yen, up 4.9 percent. The planned issuance of government bonds is 12,270 billion yen down 2 trillion yen from fiscal 1980.

Defense Boost Held Down

The growth rate in defense appropriations is restricted to 6.6 percent. Prime Minister Suzuki has stated that defense spending could not be given special treatment

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and he has given assurances that it would not hurt U.S.-Japan relations if defense spending did not increase by 9.7 percent.

The reduction of the bond issues and single-digit growth rate of the general account budget do at finance. We agree with this effort and agree also with the efforts to seek a proper balance between expenditures for social security and national security.

The boost in appropriations to counter the energy shortage and for foreign aid are correct decisions too. However, we protest against the harsh treatment of education and social security in the draft budget.

We urge the Finance Ministry to look for other expenditures which could be cut instead of weakening social security and education in this country.

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'MAINICHI' VIEWS 1981 DRAFT BUDGET, RAPS TAX HIKE

OW251135 Tokyo MAINICHI DAILY NEWS in English 24 Dec 80 p 2

[Editorial: "Draft Budget for 1981"]

[Text] The government at an extraordinary cabinet session on Monday adopted the fiscal 1981 draft budget compiled by the Finance Ministry, featuring what it calls austerity measures and a record tax increase. The general philosophy underlining the draft budget, however, completely betrayed our expectations.

We have repeatedly insisted that there are three important options to be decided in compiling the state budget, one of which should be adopted while the other two should not. In other words, we emphasized that the proposed cut in deficit-covering national bonds amounting to two trillion yen should not be covered by an increase in taxes, and that we should not depend on any natural increase in revenues resulting from the runaway inflation. The only choice left is to cut expenditures by implementing a drastic reform of existing systems that have ceased to function since the end of the era of high economic growth.

The basic principle of fiscal reform is to match expenditures with revenues, not vice versa. The draft budget compiled by the Finance Ministry however, seems to have matched revenues with expenditures. This bureaucratic concept is indeed something beyond our comprehension.

The Taxation System Research Council earlier recommended that an increase in tax revenues, equal to 3 percent of the GNP, is needed to meet growing expenditures during the coming four years of fiscal reconstruction aimed at reducing the flotation of national bonds.

Of the 3 percent, 1 percent can be covered by a natural increase in revenues, but the remaining 2 percent must be covered by a tax increase, the council said. So, the government simply went ahead with the record tax increase to "make both ends meet." The proposed 1,390 billion yen tax increase is deplorable.

Under this situation, the government will have to keep on increasing taxes or introduce the much-ballyhooed excise tax in compiling the budget for fiscal 1982 and thereafter if a balanced budget is to be maintained. The actual state of affairs surrounding the nation's taxpayers has been completely ignored. We are at a loss to find suitable words to describe the government's action. "Frightening" is inadequate.

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The question cannot be solved by merely holding the taxation council responsible. The most important thing is to call for the attention of the financial authorities concerned, the government as whole and the people. Fiscal reconstruction is bound to become synonymous with an endless "vicious cycle" always victimizing the taxpayers.

The only way to end this vicious cycle is to reduce expenditures drastically. The draft budget set aside 46,788 billion yen for general account expenditures, representing an increase of 9.9 percent over the initial fiscal 1980 budget. This was the first single-digit rate of increase in 22 years and the smallest since the 8.2 percent in the fiscal 1959 budget. The budget scale as shown by the Finance Ministry, however, is far from satisfactory since the nominal economic growth rate for next fiscal year was estimated at 9.1 percent, far below the increase rate of the general account.

A vast increase in taxes will invariably destroy household economies and business management. The nation will become disinterested in politics in general and in government promises, since there have been no efforts toward administrative reform or to review budgetary items.

One consoling factor is that the financial authorities have proposed an appropriation of 2,377 billion yen for national defense, a major subject of debate in the process of budget compilation, showing a rise of 6.6 percent as compared with 6.5 percent in the current fiscal year.

We hope that the government will further slash expenditures in the course of the negotiations as this is the only way to gain the understanding of the nation. Ministries concerned and various pressure groups are expected to start bargaining over the 180 billion yen set aside for restoring spending programs. For reconstructing the national finances, however, the fiscal authorities concerned should maintain a firm stand.

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ECONOMIC

STRATEGY FOR INTERNATIONAL 'PATENT' WAR DISCUSSED

Offensive, Defense Strategies

Tokyo NIKKEI BUSINESS in Japanese 20 Oct 80 pp 44-58

[Text] Patent-related friction has begun to intensify among business firms at home and abroad. It is caused by the fact that worldwide business firms have begun more than ever to make active use of patents as operational strategic weapons in the low innovative phase of technology.

In order to avert the patent offensive from abroad, we must develop new technology of our own and acquire the legal exclusive rights called patents as soon as possible. This becomes powerful security for management.

To this end, top managers themselves should possess the strategic awareness to freely use patents defensively and offensively. Patent strategic skill, or the lack of it, influences even the fate of the enterprise.

Offensive and Defensive Strategies for Patent War

Patent Department of Asahi Chemical Industry. The department head, Yamada, and approximately 50 staff members are engaged in reinforcing an emphasis on "liaison function." In military terminology, liaison is a communication function connecting the frontline with the General Staff headquarters.

"Patent-related disputes are spreading worldwide. How to cope with a new situation in the on-going international 'patent war?' In order to solve the problem, the patent department cannot help but to reinforce its function as a liaison officer by necessity" (Dept Head Yamada). If we assume the managerial conference consisting of a company's officers as the general staff office, then the research laboratory and factory that actually handle technical development are the frontline. Standing between the staff and the front, the liaison functions at the patent department stage include the collection of information on other firms' research and development trends, the legal defense of research achievements of its own firm, and the direction of managerial strategy.

Asahi Chemical Industry is not alone. Toshiba Corporation, Ricoh, Ajinomoto, Hitachi, Ltd.... Recently, patent departments of many firms have all been strengthening their character as a strategic force. The situation is such that they had to come out of the conventional, mainly control-oriented, patent clerical work and reinforce their structure for an immediate response to emergencies and the assumption of a fighting posture.

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Worldwide Battleground

The trend toward increased disputes over patents forms the background. According to a Patent Agency survey, the number of cases claiming misuse against the patents of other companies were 432 in 1976, 495 in 1977, 523 in 1978, and 554 in 1979. Moreover, such figures and disputes in courts are "a mere drop in a bucket, and friction between the Japanese firms and foreign firms in Europe and the United States has become increasingly noticeable...." (Mifune, Patent Dept Head, Teijin).

Let us see an example.

Dupont, a gigantic chemicals manufacturer in the United States, took Nippon Gakki Co., Ltd. [musical instrument manufacturer] to the Tokyo District Court at the end of March with the charge of infringement of a patent for the manufacturing process of a new building material resembling marble. While at it, they took Teijin to court in London in mid-July with the charge of infringement of a patent for the manufacturing process of polyester fiber. Several years ago, Hitachi Chemical Co. was brought to court regarding photoresistant film for printed circuit boards, and they are still in court. Japanese firms are not the only targets of Dupont. Since last year, Hoechst and Enka of West Germany, ICI of England, etc., have been sued for patent infringements one after another. The battleground has extended worldwide.

Nippon Gakki, enjoined to pay compensation of approximately 100 million yen and to suspend manufacturing, and Teijin, which was sued not in Japan but in England, both assert that Dupont's patents are invalid, oppose them head-on, and are prepared for a long fight. "Dupont has recently been very nervous about patents to the point of eccentricity. Aside from the propriety of their assertion, we are awed by the severity of our opponent...." (Patent Dept Head Mifune, Teijin, Ltd.). Over 40 years ago, Dupont established patents for nylon and currently possesses over 25,000 patents worldwide. They are a typical example of EuroAmerican business firms that deploy "dry" strategies with patents as a weapon. In contrast to Japanese firms, which are fearful about suing or being sued, they are making full use of patents as an offensive weapon.

Surely, patents are effective weapons. Once a patent right is established through application and examination, an exclusive right of monopoly unreachable by anti-trust laws can be maintained for 15 years (in Japan). Moreover, a characteristic of this weapon is that it is not limited to a defensive line of securing the freedom of business activities. If patents are given, royalty income is obtainable. It is also possible to give the patent free of charge to another company, thus making them liable to purchase the firm's products, or to acquire the right of operation of a new technology of other firms with a cross-license contract. Having sole patent rights, a company can suspend the manufacture of a product by a competitor. With respect to business strategy, it can become a powerful weapon having both defensive and offensive aspects.

Counterattack Against Japanese Flood

Thus, the effective key to survive the worldwide "turbulent age of technology" is how well one can make use of this weapon. The reason for the recently intensified patent offensive against Japan by the EuroAmerican firms is nothing other than this fact.

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Without even referring to the changes in income and expense from royalties, it is a known fact that Japan imported important technologies from EuroAmerican firms over the years of 1950-60's. Based on these technologies, she developed improved technology and is now about to overtake the originators in fields such as automobiles, machine tools, semiconductors, etc. As a result, Japanese exports have suddenly increased. In order to suppress this flow, some EuroAmerican firms are now deploying a counterattack strategy using basic patents as their weapon. One of the hot fronts of the world patent war is seen here.

One example is machine tools, which are recently showing a rapid increase in exports. Ten manufacturers of major machining centers (MC) such as Makino Milling Machine Co., Hitachi Machinery Co., and Yamazaki Tekkosho [Iron Works], were recently suddenly handed a contract for patent use. The opponent is the major conglomerate, Litton Industries. The substance is "in effect the demand that 0.4 percent of the price per unit be paid as a royalty when exporting to the United States." (Shimizu, president of Makino Milling Machine Co.).

The basis of their claim is that the Japanese manufacturers have infringed upon their basic patent for exchanging tools by holding the spindles at a fixed position. In any event, the Japanese parties have no alternative but to comply with the demand. (President Shimizu).

Why are they claiming royalties all of a sudden? Part of the reason is that they have concluded patent disputes in the United States with Kearney & Trecker and Excell-0 in the same trade. However, the fact that cannot be overlooked is the spectacular growth of machine tools made in Japan. It is said that few of the basic technologies of the Japanese group were developed on their own, but the majority of them are copies of EuroAmerican products. The view of the business concerns is that the Japanese machine tool manufacturers were hit right at their weak spot in the midst of increasing exports to the United States. Had they possessed patents based upon their own superior technology, they could have turned to an exchange of rights for patent use (cross-license). But, without them, they have no alternative but to comply with the payment of royalties. In the field of machine tools, disputes occur frequently. Warner-Swasey of the United States also sued Tsugami and Miyano Tekkosho last year for patent infringements.

Such disputes related to trade friction are not limited to machine tools alone. Signs are also beginning to appear with semiconductors in the field of leading technology, which are said to be the focus of friction in the 1980's. Last year, U.S. Motorola claimed payment for royalties from Japanese semiconductor manufacturers who have no cross-license. On the other hand, U.S. groups such as IBM, Texas Instruments, etc., are making strong demands for patent disclosure of technology developed by the Super-LSI Technical Research Association, a Japanese national project. "Had the Japanese party not complied, the U.S. party would not have hesitated to take away the right to use the semiconductor basic patent" (Patent Dept, Japan Texas Instruments). With such pressure, the Japanese party had no alternative but to finally comply with the total disclosure.

Change Toward "Technological Friction"

In the case of VTR, where the technology from development to production is practically monopolized by Japan, RCA last year demanded royalties from major Japanese manufacturers as exports to the United States suddenly increased. "The fact that VTR

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equipment contains circuits for broadcasting waves infringes upon the RCA patent," they claim. (Toshiba Patent Dept Head Ozu). The Japanese party has been cornered to agree to the demands of RCA, which holds the basic patent for color television. Recently, "one senses an indication that trade friction is changing to 'technological friction' related to patents" (Ozu).

Increasing intervention by the U.S. ITC (International Trade Commission) into patent disputes verifies this fact. ITC is an independent organ that primarily arbitrates dumping suits, etc. Through an amendment of the commercial law in 1974, however, that changed, and "an abatement order, such as a ban on imports, is possible by authority of the ITC (previously recommended only to the President), by regarding the import into the United States of products manufactured in other countries with unauthorized use of U.S. patents as constituting unfair competition." Since then, patent infringement suits brought before the ITC have increased noticeably. Moreover, this law was further strengthened last year, and the length of investigation and settlement was shortened to 12 months.

U.S. firms take their patent disputes, which were previously fought in the courts, to the ITC. The cost is lower than for court suits, and a conclusion is obtainable in a short period of time. When infringement is recognized, export products such as those from Japan can be banned immediately, right at the waterfront. "On the other hand, because of the short (1-year) period allowed, countermeasures such as disclosure procedures are extremely difficult for Japanese firms. Clearly, it is the U.S. defensive policy to use patents as a weapon" (Patent Agency examiner).

The number of patent infringement cases instituted with the ITC was about 15 both in 1978 and 1979, but it has already reached more than 30 cases this year. One of the companies sued is Hitachi, Ltd. "In addition to our company, Westinghouse took action against Siemens of West Germany, among others, for infringement of a patent on a gas cutter" (Patent Dept Head Takahashi). While the issue is patent infringement, their demand is only to ban imports. This suggests that the U.S. aim is unmistakably to block imports.

Solidifying Independent Technology First

Sparks of friction are beginning to fly in areas other than disputes related to such trade friction. One example is the field of genetic engineering, which is attracting attention as a future technology. Microorganisms created by the manipulation of genes had been excluded from patentable subject matter in the United States, but it has been recently decided to recognize them for patenting there. On the other hand, "although it is a patentable subject in Japan, research in the field cannot be carried out freely because of the strict guidelines of the Council for Science and Technology" (Patent Dept Head Mangyo, Mitsubishi Chemical Ind., Ltd.). Hit [with the news], the Japanese firms stirred slowly, but in the meantime, EuroAmerican concerns such as ICI, GE, and the Pasteur Institute have applied one after another for patents related to genetic manipulation in Japan. Of the 23 cases announced up to this May, 16 cases were held by the EuroAmerican force. Since this is a leading field, the strengthened patent applications of EuroAmerican firms in Japan cannot be overlooked.

In the field of chemistry, patent applications by EuroAmerican firms in Japan (cases published in 1979) numbered 516 cases by Bayer of West Germany, 323 by Ciba of

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Switzerland, and 152 by Dupont of the United States. In all cases, the figures surpass the number of overseas applications by Japanese firms in the same trades. And it is not merely the number. "Recently, qualitative changes have also been significant in the Japanese applications by EuroAmerican firms" (Dept Head Ozu, Toshiba). During the years from 1960 to 1970, patent applications in Japan were made incidental to applications in Europe or the United States. Consequently, the application proceedings were left almost entirely to Japanese attorneys. Naturally, the patent specifications were less than perfect. "Thus, the Japanese firms could easily pass through their patent nets" (Ozu, Toshiba).

In the past several years, however, EuroAmerican firms such as TI and Motorola with semiconductors and Phillips with electrical machinery have all set up a patent department in their offices in Japan, and while they are strengthening their relationship with the outside attorneys' offices, they are beginning to expand their Japanese staff. There is also talk that "recently, scouts from foreign capital firms have been bringing job offers at 15 million yen per year" (junior examiner at the Patent Agency). EuroAmerican firms are apparently building a patent strategy steadily aimed at the turbulent age of technology. In the past several years there have been cases of Japanese firms sending their patent department staff abroad. However, virtually no firm employs local staff abroad who are well informed in patent work.

How should Japanese firms response in the future to EuroAmerican firms who make full use of patent strategy at the backdoor? "Many of the royalty payments currently made by Japanese firms to EuroAmerican firms result from patents filed for registration with relative ease more than 10 years ago. They are now beginning to make full use of the power of patented technology. Improper measures may invite serious situations in the future" (Dept Head Ozu, Toshiba).

Needless to say, the important premise is to develop our own technology and solidify our legal rights as soon as possible. The new idea now being demanded is how to make active use of a patent once obtained as a strategic weapon. We shall examine next the recent patent strategies of various firms.

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Recent Cases of Major Patent Disputes With Foreign Firms

Problem onset or time settled	Right claimant	Opponent	Issues	Settlement or current status
Aug 80	Litton Ind. U.S.	Ten major machine tool manufacturers, including Hitachi Machinery Co., Makino Milling Machine Co., etc.	Infringement of patent on exchanging tools by hold- ing the spindle at a fixed position	Demand payment of royalty of 0.4% of unit price of the machining centers exported to U.S. Japanese party accepts.
July 80	Dupont U.S.	Teijin, Ltd.	Patent infringement of manufacturing process for polyester fibers based on DTY	Dupont brought suit to a London court with the British patent as the weapon. Cur- rently pending in court. Besides Teijin, ICI and others are being sued.
June 80	Textron U.S.	Yoshida Kogyo	Patent infringement on nylon slide fasteners	Textron brought suit to ITC. Judgment, issued end of Aug, was that there was no evidence of patent infringement. Yoshida Kogyo won the suit.
May 80	Dupont U.S.	Nippon Gakki Co.	Patent infringement on Corlean, a new struc- tural material resemb- ling marble	Suit was brought to the Tokyo District Court with demand of 100 million yen in compensa- tion and a ban on manufacture. Currently on trial.
Mar 80	Asahi Chem. Ind. Co.	Enka W. Germany	Patent infringement on hollow fiber type of artificial kidney	Enka agreed to pay patent royalty to Asahi Chem. Ind. Amicable settlement.
Nov 79	American Hoechst	Asahi-Dow	Patent infringement on shock-resistant poly- styrene	Hoechst sued Dow in various countries in the world. Lost suit at the first hearing in Nov. the first year, and appealed.

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Problem onset or time settled	Right claimant	Opponent	Issues	Settlement or current status
Oct 79	Warner Swasey	Tsugami, Yamazaki, and Miyano Iron Works	Patent infringement related to spindles and turning bars	Warner (U.S.) brought suit to ITC. Tsugami and Miyano reached amicable settlement by paying royalty.
Sept 79	Sandoz Switzerland	Fujimoto Seiyaku	Patent infringement on hypertension and arrhythmia therapeutics	Sandoz has technical agreement with Sankyo and possesses numerous Japanese patents. Still on trial.
July 79	Motorola U.S.	Japanese semiconductor manufacturers	Claimed royalty for semiconductor patent	U.S. party took royalty for the share exported to U.S. Targets are mainly lower to middle-level manufacturers without cross-licenses.
June 79	RCA U.S.	Major household electrical appliance manufacturers	Claimed royalty for home-use VTR	With increased production of VTR's, RCA suddenly demanded royalty payments. After 2-year negotiation, amicable settlement with payment from Japanese party.
Mar 79	Westinghouse U.S.	Hitachi, Ltd.	Patent infringement on gas cutter	U.S. party brought suits to ITC against Japanese and European manufacturers. Currently being deferred.
Feb 79	GM U.S.	Toyota Motor Co. Ltd.	Patent infringement on device to reduce exhaust emission	U.S. party sued with a demand for \$1 million royalty, but suit was dismissed.
—	Baxter-Travenol	K.K. Top	Patent infringement on inspection sampling device	U.S. party brought suit to Tokyo District Court. Still on trial.

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Problem onset or time settled	Right claimant	Opponent	Issues	Settlement or current status
—	Sandoz Switzerland	Nippon Kayaku K.K.	Patent rights dispute relating to water-insoluble monoazo dyes	Nippon Kayaku asserts invalidity of Sandoz' patent. Long dispute of nearly 10 years.
Oct 78	Pfizer & Co. U.S.	Tobishi Chem. Ind.; Kirin Seiyaku	Patent infringement of antibiotics of the tetracycline group	U.S. party applied for provisional disposition to ban sales and manufacture by the companies; amicable settlement was soon reached, with lump-sum payment.
Aug 78	Oscar Mayer U.S.	Marudai Shokuhin	Patent infringement of ham and sausage containers	U.S. party supplied technology to Prima Meat Packers. Amicable settlement reached soon after suit was brought to Osaka District Court.
Apr 78	Montedison Italy	Ube Ind., Ltd.	Patent infringement of polypropylene	Demand 800 million yen in compensation; Ube imported technology from Dart Industries of U.S. Amicable settlement.
May 77	All-Russia Chamber of Commerce	Fuji Kagaku Kogyo, Mitsui, Seiyaku Kogyo, etc.	Patent infringement of an oral carcinostatic agent, Tegafur	Taiho Yakuhin imports from Russia for sale. Still on trial.
Jan 77	Beecham England	Bristol-Banyu Pharmaceutical, etc.	Patent infringement of semisynthetic penicillin	Applied for provisional disposition to Tokyo District Court; dispute still continues.
Jan 77	Zenith U.S.	Toshiba Corp.	Invalid litigation on color CRT patent	Toshiba took action to confirm invalidity in 1973. Won the suit at the federal high court.

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Problem onset or time settled	Right claimant	Opponent	Issues	Settlement or current status
Sept 76	Eli Lilly U.S.	Toyo Jozo K.K.	Patent infringement on the manufacturing process of antibiotic, Cephalothin	Lilly sells through Shionogi & Co. to physicians' houses; dispute still in court.
Sept 76	FMC U.S.	Nichiro Kogyo	Patent infringement on strapping device of packaging machine	Japanese party agreed to pay settlement lump-sum and royalty; amicable settlement.
July 76	Sesifu Co., Ltd. France	[expansion unknown-transliterated:] Morishita Seiyaku	Patent infringement of gastrointestinal drug	French party had supplied Fujisawa Yakuhin with exclusive distributorship for the drug. Lost case in district court; sales discontinued.
July 76	Toyo Rayon, etc.	Dunlop Rubbert England	Patent right dispute related to blackshaft	British firm applied for patent in Japan. Due to protests from Japanese manufacturers, application was rejected.
June 76	Dupont U.S.	Hitachi Chemical Ind.	Patent infringement on photosensitive film for printed circuit boards	Dupont has a virtual monopoly on the product; Hitachi claims the merchandise was independently developed; still on trial.
June 76	General Instruments U.S.	Japan Tuner, etc.	Partial patent infringement on car radios	Japanese party has already discontinued production in essence, but dispute still in court.
Aug 75	Systo Cope Co., Ltd. U.S.	Olympus Optical Co.	Patent infringement on glass fiber optical equipment	U.S. party brought suit to ITC. Japanese party's output was small. Amicable settlement.
June 75	Ford U.S.	Japanese automobile and paint manufacturers	Patent infringement on anodizing process	Japanese party admitted its infringement of basic patent; settled with lump-sum and payment of royalties.

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Establish Right of Own Technology Potential

In the background of the international patent war, the role of the "patent strategy department" has been enlarged.

In order to establish the right of a firm's own technology potential, the new role of patent departments to take strategic action in various functional phases such as patent applications, contracts, and information gathering.

It is not an overstatement to say that the force of the patent strategy department is proportional to the level of executives' awareness of patents.

Executives--Understanding the Need for a Fighting Force

The "patent department" is a place where a company clerk writes an application document, referring to law books in an odor-filled room.... Such an image is no longer true. The patent department of a company that is determined to survive the international patent war is now undergoing substantial changes.

At Ricoh, which "had been fast asleep in the patent phase" until only three or four years ago, the activities of the "patent department in action" have recently been drawing attention. For example, prior to the recent export of a new product, copiers, to various European countries, two staff members of the patent department flew to Amsterdam. Their mission was to gather in one room lawyers and patent attorneys from West Germany, France, England, and the Netherlands who had been contracted by Ricoh and to check, before the fact, whether or not the new product infringed upon patents of European manufacturers.

Having before them three units of the new product which had been shipped in advance, patent specialists from each country carried out a thorough deliberation for a week. As soon as the two staff members returned to Japan, the patent department took necessary measures such as design changes for different countries or the scrapping of patents of competitor firms, depending on the country. As a result, "although there was an expense for advance investigation as a preventive measure, we did not have to face a suit for patent infringement from the European manufacturers after the products had been exported, and then end up with a mountain of unsold products" (Patent Dept Head Itoga). If the territorial survey had not been conducted, "we might have suffered damages of several hundred million yen" (Dept Head Itoga).

Ricoh began to strengthen the patent department in 1975 when patent disputes with the U.S. Xerox Corporation had been temporarily settled. At the time, the company was lukewarm in its thinking toward patents, and this can be blamed as the cause for this dispute. However, as a result of the heavy patent offensive by Xerox, the company obtained an awareness that "a patent strategy is nothing more than technological strategy to establish the right of one's own technology potential" (Dept Head Itoga). The dispatching of the patent staff to Europe had this kind of thinking as the backdrop.

In addition, the company's recent policy has been for the patent department head always to attend managerial conferences to determine the direction of future product development. The top executives' patent awareness is truly high, as exemplified by the president himself insisting upon confirmation of a patent application at a

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conference, etc. Appeals such as "don't develop unpatentable products" are even heard. In other words, in the case of Ricoh, the top executives have come to recognize the importance of patents, and blessed with their understanding the patent department is in the process of changing into a "patent strategy department" which plays a central role in managerial strategy.

"Patent strategy department" activities have begun in other firms also. All patent departments seem to be strategically demonstrating their respective functions for patent applications, contracts, and information gathering. First, let us begin with application strategy....

Application--Based on Area and Products

Toshiba Corporation has just about established an application strategy for the United States. The cardinal point is not merely to file a large number of patent applications, but to establish strong patent rights even with a small number. The idea stems from the fact that the company is still tormented by the powerful patents that United States firms applied for in Japan 20 years ago, and they feel the need for a counterattack against the United States at this time. Also, once a powerful patent is obtained, there is an advantage of being able to use a multiple number of technologies by cross-licensing with other firms. This is the idea behind the application strategy of an "excellent few."

On the other hand, unlike applications to the United States, the application strategy for Europe and Asia is "competition with quantity" all the way. Particularly, the venture into the European market is the future project, and in order to secure freedom for future activities in market areas, every conceivable patent must first be filed as soon as possible. In this effort, the company is considering patent application strategy with matrices by country and merchandising depending on the mode of venture, such as product exports, technology exports, and local production.

When the long-term plan for product exports to a certain country is determined, applications for all related patents begin four to five years in advance in the market area, with the aim of securing the future exclusive rights to produce and sell. Foreign applications cost twice as much as domestic applications. However, "partly owing to the top executives' for patent understanding of the patent departments budget has never been cut" (Dept Head Ozu).

In the case of Asahi Chemical Industries as well, the overseas patent application strategy has been greatly changed. "In the past, when something was invented in various departments, an application was made immediately. Recently, however, the target has been narrowed to a certain business area by viewing the future operational strategies of the company as a whole, and the trend has shifted to making a concentrated, collective application in order to further strengthen the exclusive rights of the company's own technologies overseas" (Patent Dept Head Yamada).

Then how has the actual mode of overseas application changed? In the case of Toshiba, it may be stated that "efforts are being made to consider an even balance between patents of other companies and to make careful applications, so that Toshiba technology can demonstrate its exclusive effect overseas 10 and 20 years hence" (Dept Head Ozu). In fact, at the time the application in the United States

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for the "black stripe" patent for the video cathode ray tube, the company asked a leading American patent attorney to go over the patent specification carefully. This patent application not only escaped any disputes with U.S. manufacturers, but "it is earning royalties from several firms in units of 100 million yen annually" (Dept Head Ozu).

Nippon Kayaku K.K. also takes special care with its overseas applications. The reason is the difference in claims (the scope of patent claims) listed in specifications between Japan and the EuroAmerican countries. Consequently, when a patent for manufacturing acroleins from propylene was applied for overseas, they did not merely translate the specification applied to the Japanese Patent Agency into various languages.

In other words, for countries where there is a broader scope of claims, applications were made with additional statements covering the catalysis technology to manufacture acroleins. As soon as these applications were approved, licenses were requested from companies in five countries, including the United States, Great Britain, and France, to use this catalytic technology for synthesis of another substance called acronitrile, and royalties amounting to 3.3 billion yen were acquired. "It is also important to gain an insight into the patent examination peculiarities in each country." (Patent Section Chief Wada).

The different conception of patents between Japan and the EuroAmerican countries also extends to the establishment of patent rights. One example is that in the United States, the rights are established based on the day of invention, whereas in Japan they are based on the date of application after the invention. In this case, even though an application is made earlier than other companies in the United States, a patent is frequently denied. Therefore, Ricoh founded a totally financed research and development company in the United States in 1979 and began to take a position toward applications that is suitable to the local system, and this is showing positive results. "In the future, it will be necessary to increase collaborative research in the United States and to acquire United States patents as soon as possible" (Matsui, managing director and Patent Dept Head, Takeda Chemical Ind., Ltd.).

As described above, the conception for patent application differs greatly between Japan and overseas countries. Consequently, increasingly more companies place resident patent specialists overseas, mainly in the United States, to strengthen their overseas strategy. In the case of Toshiba, two members of the patent department have been stationed in the United States since April of last year. In addition, the company sends two different members of the patent department every three months in order to study under an American patent attorney to thoroughly train them to prepare specifications. Eight members have already been immersed in this "short-term training system," and they have apparently become the strong fighting force in the company's U.S. applications.

Contract--Calculations With the Future in Mind

Paralleling the application strategy, the importance of strengthening the patent contract strategy has increased in the era of the international patent war. Enterprises in Japan could not have made a high degree of growth without the technologies introduced from the EuroAmerican countries up to about 1965. Consequently, "unequal treaty" patent contracts have been swallowed. However, now

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that our technological might has come up to the EuroAmerican level, we have arrived at an era in which patent contracts must also be switched to strategic ones.

Nippon Kayaku K.K. is an example which succeeded in this process. The company introduced a patent for manufacturing acrylic acid developed by the U.S. firm SOHIO (Standard Oil Ohio) in 1963. Meanwhile, the company was one step ahead of SOHIO in developing an improved technique. However, SOHIO, which provided the basic patent, demanded that Nippon Kayaku "submit the technology gratis to SOHIO whenever improved techniques are developed" based on the contract. SOHIO would not concede, so following some squabbling, the technological power of Nippon Kayaku was finally recognized and the "unequal treaty" was revised. Nippon Kayaku is now fully applying the experience of the time.

In other words, when the company provides overseas manufacturers with technology, such as a carcinostatic agent they developed, they always include in the contract "a statement to the effect that the opponent firm submit, within reasonable limits, their future technology when developed" (Patent Section Chief Takeda). Now they are able to use overseas technology in equal terms or more advantageously.

Similarly, Shin-etsu Chemical Industry Co., Ltd., which has many worldwide achievements to its credit with technical exports of vinyl chloride resins, and Nippon Steel Corporation, whose iron manufacturing technology is at the world's highest level, "always demand returns for their technical exports" (Kanagawa, director of Shinetsu Chemical Ind.; Tomiura, technical control manager of Nippon Steel Corp.).

Aside from the return supplies of improved technologies, having a strategic intention in advance of signing patent contracts with foreign firms can yield great results. Let us examine the case of Takeda Chemical Industries, Ltd.

In 1971, the above company obtained a patent in West Germany concerning "sydnone imine" derivatives used as cardiac agents in the circulatory system. Soon thereafter, Boehringer, which had been conducting similar studies, offered joint development, and a cross-license contract was concluded between the two companies. However, Takeda Chemical Industries had a certain calculation working at that time. In other words, when Takeda develops products using their own technology, they are caught in Boehringer's patent network in various countries when exporting to the world market. In order to avoid this, they decided that cross-license contracts would be effective.

At that time, however, this product by Takeda was limited to domestic sales. Subsequently, however, they received a request from Cassella A.G., a subsidiary of Hoechst, for a license to sell this product in the world market, and they promptly consented. In this case, too, the cross-license with Boehringer was effective, and the royalty from Cassella did not have to be totally carried away by Boehringer. A "patent contract strategy with the future in mind" such as this (Patent Dept Head Matsui currently brings the company an annual profit of approximately 80 million yen from Cassella).

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Information--Prevent Infringement Beforehand

In order to survive in the international patent war, information strategy is indispensable along with application and contract strategies. Aside from learning the research trends of rival firms from information supplied in patent applications of business firms both at home and abroad, infringement of patent rights of other firms must be prevented beforehand.

Ajinomoto Company began its own information classification based on WPI (see 22 Sept issue), a data base that includes the patent information of 27 countries throughout the world. For example, classification is made not only by products and technology but by countries of invention, business firms, and so forth, in detail, and the necessary information is circulated as to each research department "Patent Survey News."

In the case of Ricoh, the patent information based on a data base is being used to the fullest extent strategically by further digging. Like Ajinomoto, the company classifies patent information into the company's pattern and prepares "patent maps." What is unique is the fact that Ricoh has been using the information obtained from the patent classification by business and inventors to actually find technologists. "The personnel department is also grateful for the usefulness of the patent map" (Patent Dept Head Itoga).

In addition, the patent information of business firms both at home and abroad, as classified in the above patent map, is "used by this company to look for partners for technical agreements or business purchases" (Dept Head Itoga). The information strategy of a patent department is expected to have a radar function that is indispensable in the international patent war.

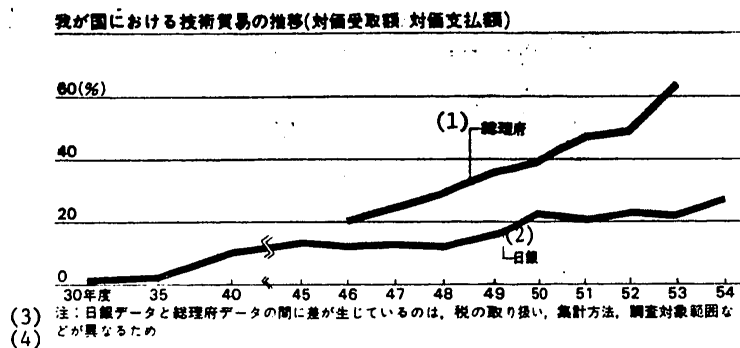
In the meantime, each company is making gradual progress in systematizing a "patent strategy department" that carries out respective functions for application, contract, and information. Kobe Steel Works, Ltd. sends two technicians at a time from various iron foundries and business departments to the patent department for two years to have them learn patent strategies. At Ajinomoto Co., also, "members of the patent department are regarded as a kind of armament. Having too many is a burden, but we are formulating a structure with a minimum checkmate force in a ready state at all times, which can be supplemented in an emergency" (Ajinomoto Patent Dept Head Hayashi). Toyo Rayon and Asahi Glass are also training their own "patent strategy department members."

At the same time, some firms are beginning to hire within the patent department many qualified attorneys who are well informed about the overseas state of affairs. The fighting force of the "patent strategy department" is found to show an increase that is in direct proportion to the increased patent awareness on the part of top executives.

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Changes in technological trade in Japan (equivalent receipts/equivalent payments)



Key:

1. Prime Minister's Office
2. Bank of Japan
3. JFY 1955, 1960, 1965, 1970, 1971-1979
4. Note: Difference between the Bank of Japan data and the Prime Minister's Office data is caused by different ways of handling taxes, tabulating methods, and the scope of survey subjects.

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(1) 特許保有件数	(2) 特許出願件数	(3) 海外駐在員	(4) 弁理士	(5) 特許部長の取締役
54年度 (7) 累積	国内 (8) 54年度	海外 (9) 54年度	研修員 (11)	兼務
約390	2,360	548	62	1 (ワシントン)
約280	約1,800	596	159	1 (ワシントン)
1,625	26,482	18,979*	1193*	7 (米国6, 西独1)
238	1,705	372	32	0
175	2,405	657	39	1
849	10,325	4,862*	77*	0
218	2,796	3,273*	52*	2
800	5,500	1,456*	300*	0
2,443	16,646	1,088*	80*	1
550	4,700	7,500	400	3
166	2,086	3,200	200	10
113	1,262	10,927	2,002	4 (米国3, 西独1)
223	4,529	13,786	1,015	3
817	11,131	2,800	560	1
48	456	1,100	380	1
535	6,060	579	76	0
3087*	491*	489	68	1
1,000*	5,700*	1,064	351	0
		3,824*	360*	0
		784*	166*	1
		694	968	0
		592	958	1
		172	118	0
		120	247	1
		670*	730*	2
		520*	790*	2
		219*		7
		336*		3
		300	1 (18)	3
		2,400	300 (デュッセルドルフ)	

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(continued)

特許保有件数		特許出願件数		海外駐在員	弁理士	特許部長の取締役
54年度	累計	国内(54年 50年)	海外(54年 50年)	研修員	(弁理士)	兼務
22	410	275 162	90 54	0	2	なし
1,562	57	1 276 192 *	352 451 (19)	2(米国1. 西独1)	14 (1) (15)	取締役兼務
250	3,000	700 1,250	340 340	1	2	なし
57	323	177 152	31 61	0	0	なし
223	4,558	774 845	178 138 *	1(ミュンヘン) (20)	4	なし
177	827	98 88	125 75	0	1	なし
1,900	3,900	250 190	70 95	0	5	なし
403	---	36 58	80 58	0	1	なし (14)
150	8,900	541 955 *	217 385	0	5	なし
345	2,282	1,352 1,345	113 89	0	1	なし
1,100	約10,000	3,400 2,700	160 410 *	1(ジュッセルドル フ) (18)	6	なし
845	4,662	1,285 1,176	45 31	0	0	なし
90	900	155 150	6 10	0	0	なし
50	420	140 140	19 14	0	0	なし
1	3	1 5	0 0	0	0	なし
1	5	0 2	0 0	0	0	なし
---	80	16 22	3 2	0	1	なし

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Key:

- | | |
|--------------------------------------------------------------------------|------------------------------------|
| 1. Number of patent cases in possession | 11. 1 (Washington), trainee |
| 2. Number of patent cases applied | 12. Treated as an executive |
| 3. Overseas resident staff; trainees | 13. 7 (6 in U.S.; 1 in W. Germany) |
| 4. Patent attorneys (lawyers) | 14. None |
| 5. Patent department head who is also serving on the board of directors. | 15. Serves also as a director |
| 6. 1979 | 16. 4 (3 in U.S.; 1 in W. Germany) |
| 7. Cumulative total | 17. 1 (Washington) |
| 8. Domestic (1979, 1975) | 18. 1 (Duesseldorf) |
| 9. Overseas (1979, 1975) | 19. 2 (1 in U.S.; 1 in W. Germany) |
| 10. Approximately | 20. 1 (Munich) |

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In order to survive the international patent war, a strengthening of the fighting force in the patent department is essential.

Company name	Name of patent sector	Patent sector established	Staff members		Number of staff members by function
			current (women)	5 years ago (women)	
Kobe Steel Works, Ltd.	Tech. Dev. Div., Tech/Legal Affairs Dept.	1948	41 (8) 31 (8)		Application (26), contract (10), information (5), control (6)
Nippon Kokan K.K.	Tech. Dev. Div., Patent Section	June 1967	approx. 45 (7) 50 (-)		Application (20), contract (10), information (15)
Toshiba Corp.	Patent Dept.	1912	270 (-)		Application (10), contract, etc. (165), information (10), control (35), others
Yokogawa Elect. Works, Ltd.	Patent Dept.	Jan 1955	23 (5) 20(4)		-
Minolta Camera Co., Ltd.	Patent Dept.	June 1962	32 (13) 29 (11)		-
Sanyo Elect. Co., Ltd.	Patent Center	May 1950	69 (20) 50 (14)		Patent control (57), design & trademark (9), others (3)
Sumitomo Elect. Ind., Ltd.	Patent Dept.	1938	26 (6) 17 (3)		Technical (14), clerical (12)
Fujitsu, Ltd.	Patent Dept.	1935	150 (-)		Application (50), tech/contract (60-70), information (20)
Hitachi, Ltd.	Patent Dept.	1921	281 (48) -		Application (160), contract (8), information (10), control (20), others
Canon Camera	Patent Dept.	1958	100 (30) 60 (20)		Utility design (80), contract, information, etc. (20)

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Company name	Name of patent sector	Patent sector established	Staff members		Number of staff members by function
			current (women)	5 years ago (women)	
Taeishi Denki	Patent Section	Oct 1958	30 (-)	-	-
TDK Elec- tronics	Patent Dept.	Nov 1970	16 (2) 15 (1)	Application (10), contract (1), survey (1), others (3)	
Ricoh Co.	Technical Div., Patent Dept.	Apr 1961	60 (21) 38 (13)	Disposition of rights (34), information (11), control (15)	
Sumitomo Chem. Co., Ltd.	Patent Dept.	1953	26 (7) 30 (9)	Application (26) only	
Shinetsu Chem. Ind. Co., Ltd.	Patent Dept.	Aug 1962	12 (2) 11 (2)	Application (4), survey (3), contract (2), others	
Fuji Photo Film Co., Ltd.	Patent synthesis Dept.	Nov 1979 (present org.)	70 (20) 50 (-)	-	
Mitsubishi Chem. Ind.	Patent Dept.	Sept 1940	71 (35) 101 (43)	Application (36), contract (9), survey (13), control (11)	
Nippon Steel Corp.	Tech. Control Dept., Pat. Synthesis Section	1951 (Yawata) 1960 (Fuji)	92 (21) 95 (20)	Application (60), survey, in- formation (30), etc.	
Mitsubishi Petrochemical Co., Ltd.	Patent Dept.	Dec 1964	17 (4) 20 (8)	Application, contract (8)	
Takeda Chem. Ind., Ltd.	Patent Dept.	June 1953	75 (14) -	-	

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Company name	Name of patent sector	Patent sector established	Staff members	
			current (women) 5 years ago (women)	Number of staff members by function
Asahi Chemical Ind. Co., Ltd.	Patent Dept.	1959	31 (6) 58 (17)	Application (20), others (11)
Yokohama Rubber Co., Ltd.	Patent Section	Sept 1969	12 (1) 13 (3)	Application (5), contract (2), information (3)
Toyo Rayon Co., Ltd.	Patent Dept.	May 1960	60 (15) 78 (30)	Application, contract, etc. of patent, trademarks, etc. (42), survey (7), others (11)
Nippon Kayaku K.K.	Tech. Dev. Div., Patent Section	1961	11 (2) 12 (4)	Divided into various technical fields
Ajinomoto Co., Inc.	Patent Dept.	Mar 1961	24 (10) 32 (12)	Application (15), contract (3), information (5), others (1)
Eizai Co., Ltd.	Legal Affairs Dept.	1963	13 (4) 13 (4)	Application, contract, etc. of patent, trademarks, etc. (9), information (2), others (2)
Teijin, Ltd.	Patent Dept.	1953	40 (13) 52 (16)	-
Sumitomo Metal Ind., Ltd.	Tech. Control Dept., Patent Section	Apr 1959	25 (2) 20 (5)	Application (15), contract (2), information (1), others (7)
Mitsubishi Heavy Ind. Ltd.	Tech. Div., Patent Contract Dept.	Pre-W.W. II	54 (15) 53 (20)	Application (32), contract (15), information (3), others (4)

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Company name	Name of patent sector	Patent sector established	Staff members	
			current (women) 5 years ago (women)	Number of staff members by function
Hitachi Ship-building & Eng. Co., Ltd.	Tech. Dev. Div., Patent Dept.	Mar 1963	20 (4) 25 (-)	Application (9), contract (4), information (3), others (4)
Kashima Kensetsu	Patent Center	July 1970	8 (2) 6 (2)	Application (3), contract (2), information (3)
Taisei Constr. Co., Ltd.	Tech. Div., Tech. Control Dept., Patent Section	June 1971	8 (1) 11 (2)	-
Sumitomo Corp.	Osaka Gen. Affairs Dept., Document Section	1945	1 (-)	-
Marubeni Corp.	Legal Affairs Dept.	Apr 1974	28 (6) 22 (5)	-
Jugo Paper Mfg. Co., Ltd.	Gen. Affairs Dept., Legal Affairs Group	1949	7 (1) 7 (1)	Application (2), contract (3), information (2)

Note: *includes patent and utility design.

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Notable Improvement, but Imports Still in Excess

Of 56 major companies, as many as three-fourths have drastically increased their royalty income from overseas in the past five years.

As a result, the balance of royalty income to expense for various firms has showed an improvement in two-thirds of the firms. It shows the results of independent technological development by Japanese industry.

However, in comparison to EuroAmerican countries, Japanese technological trade is still extremely excessive in imports. Strengthened patent rights overseas will be a force to correct this imbalance.

There has been a shift from the era of exporting products manufactured with imported EuroAmerican technology to an era of exporting the technology itself. Japanese enterprises are apparently achieving conceptual changes. According to a survey conducted by the Science and Technology Agency, the number of new technological imports in JFY 1979 was 2,116--the first decrease since JFY 1975. At the same time, the Japanese royalty balance, which has been showing receipts at 20-22 percent of payments in the past several years, increased in JFY 1979 by 5 points from the previous year, indicating a big growth to the 27 percent level.

This trend is clearly visible when we look at individual business firms. When a questionnaire survey of 56 major companies was conducted concerning royalty income and expense, 40 percent of the firms had royalty receipts in excess of payments in 1979; this was the same level as in 1975, but the substance of the balance has greatly improved.

In particular, the percentage of companies who have drastically increased their royalty income from overseas reached 75 percent. Notably, Sumitomo Chemical Co., Ltd. and Nippon Kayaku K.K., whose domestic income exceeded overseas income five years ago, reversed the ratio in JFY 1979. Overseas income and expense, which account for royalty payment overseas, also showed an improved balance in approximately 60 percent of the businesses. Consequently, two-thirds of the companies showed a favorable turn in royalty balance, which combines domestic and overseas accounts.

By type of industry, the steel industry notably shows a favorable trend in the royalty balance. Early in the year, Nippon Steel Corporation decided to provide Armco Steel with comprehensive technical know-how. Kawasaki Steel Corporation also sold the patent and know-how of the continuous casting technology to the Conecast, Inc. Thus, one after another they have begun to export independent technology to the U.S. steel manufacturers, their teachers of yesterday. Notably, the 1979 royalty income of Nippon Steel Corporation was decisively at the top, being 11.8 billion yen and as much as ten times greater than the expense.

On the other hand, chemistry as a whole shows an improving trend in the income/expense balance, but in the field of electrical appliances and machinery, many firms still depend on imported technology.

However, Tokyo Sanyo Electric Co. exported technology related to semiconductor equipment, the leading technology, and put its income/expense balance into the

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black all at once. Aiwa Co. also is increasing its royalty income from overseas, exceeding the domestic income compared to five years ago. Hitachi, Ltd. is also giving another look at technology itself as a source of earnings. As a result of positively disclosing patents both at home and abroad, the royalty income/expense ratio (royalty income divided by royalty payment) improved from 38 percent in JFY 1975 to 60 percent in 1979.

Thus, the royalty balance of Japanese businesses is gradually improving. However, when we look at the technological trade of Japan as a whole, receipts are about one-fourth of payments. In contrast, the United States has receipts which are 9.5 times payments, and both Great Britain and France have receipts in excess of payments. The development of independent technology and new patent strategies are sought for these very reasons.

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Breakdown of Royalty Incomes and Payments and Major Destination of Technology Exports

技術料収入・支払額の内訳と主要提供先

社名 (1)	(2) 技術料収入 (百万円)	(3) 対海外		(4) 技術料支払い (百万円)		(5) 54年度の 経常利益 (百万円)	(6) 技術料収入の 収益率 (%)	(7) 54年度の主要提供技術と 技術料収入(百万円)	
		対国内	対海外	対国内	対海外				
住友金属工業 (8)	(9) 54年度	752.2	606.0	281.6	233.5	78,908	1.0	USスチール、ベイトウン技術援助	42.1
	(10) 50年度	226.8	130.6	281.8	243.3			(11) ローレン・スター・スチール技術援助	
			96.1		18.5				
日本鋼管 (12)	(9) 54年度	2000.0	2000.0	—	—	50,890	3.9	スウェーデンのサーブ社向け冷延技	500.0
	(10) 50年度	1000.0	1000.0	—	—			(13) 術供与	
			0						
日本製鋼所 (14)	54年度	24.6	24.6	362.4	356.8	▲2,531	—	塔槽品、鋼製品の製造方法に関する技術料	24.6
	50年度	—	—	740.9	729.4			(15)	
					11.5				
川崎製鉄 (16)	54年度	1239.0	1190.0	314.0	300.0	92,656	1.3	米国コンキャスト社向け連続鋳造中	—
	50年度	3.0	1.0	952.0	919.0			(17) のスラブ幅変更技術	
			2.0		33.0				
新日本製鉄 (18)	54年度	11800.0	—	1100.0	—	182,357	6.5	S.A.コックリル社向け連続鋳造設備	—
	50年度	7700.0	—	600.0	—			(19) のエンジニアリング、操業技術	
神戸製鋼所 (20)	54年度	—	2119.0	—	2869.0	46,629	—	棒鋼圧延プラント	200.0
	50年度	—	333.0	—	2421.0			(21)	
横河電機製作所 (22)	54年度	120.8	32.4	425.7	415.1	6,145	2.0	オートメーション計測機器	120.8
	50年度	52.4	10.7	489.7	482.7			(23)	
			41.7		7.0				
日新電機 (24)	54年度	9.0	2.7	52.8	46.8	4,272	0.2		
	50年度	5.3	4.1	74.0	74.0				
			1.2		0.0				
日立精機 (25)	54年度	62.2	0	61.9	61.9	1,734	3.6	汎用工作機械の技術供与	24.9
	50年度	85.5	0	20.5	20.5			(26)	
			85.5		0				
オルガノ (27)	54年度	11.6	2.1	37.0	31.6	300	3.9		
	50年度	6.9	0.04	63.6	45.6				
			6.8		17.9				
日東電気工業 (28)	54年度	0	0	64.2	52.5	8,125	0		
	50年度	0	0	28.4	26.4				
			0		2.0				
大塚機工 (29)	54年度	13.4	11.7	141.1	141.1	981	1.4	コンベヤ組立に関する技術援助料	—
	50年度	0.3	0	107.9	107.9			(30)	
			0.3		0				
日立マクセル (31)	54年度	15.9	15.9	27.7	0	12,013	0.1	商標マクセル使用料	15.9
	50年度	151.4	149.4	0.1	0			(32)	
			1.9		0.1				
三洋電機 (33)	54年度	704.0	647.0	1797.0	1765.0	28,527	2.5	リチウム電池技術供与(西独ファ	60.0
	50年度	245.0	180.0	1349.0	1329.0			ルタ社向け)(34)	
			65.0		20.0				

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技術料収入・支払額の内訳と主要提供先

社名	技術料収入		技術料支払い		54年度の 経常利益 (百万円)	技術料収入の 収益寄与率 (%)	54年度の主要提供技術と 技術料収入(百万円)
	(百万円)	対国内	(百万円)	対国内			
日立製作所 (35)	54年度	4100.0	3190.0	6800.0	6600.0	106.652	3.8 米国P C I (パワー・コンバージ ョン社) へのリチウム電池技術
	50年度	1930.0	1650.0	5030.0	4900.0		
			280.0		130.0		
東京三洋電機 (37)	54年度	665.7	620.6	386.8	384.3	16.508	4.0 半導体装置 151.9
			45.1		2.4		
	50年度	308.9	227.1	444.5	444.1		—(38)
			81.8		0.4		
沖電気工業 (39)	54年度	263.1	—	660.8	—	9.881	2.7
	50年度	28.3	—	560.1	—		
キヤノン (40)	54年度	1172.0	229.0	197.0	85.0	18.585	6.3
			943.0		112.0		
	50年度	557.0	331.0	268.0	73.0		
			226.0		195.0		
アイワ (41)	54年度	309.3	162.6	42.5	42.5	183	169.0 カセットテープレコーダー関係技術 255.3
			146.6		0.0		(42) (ラジカセ、カーステレオ、デッキなど)
	50年度	102.4	35.8	54.6	54.5		
			66.6		0.1		
オリンパス光学工業 (43)	54年度	—	—	16.0	6.0	10.520	—
			—		10.0		
	50年度	—	—	30.0	20.0		
			—		10.0		
北辰電機製作所 (44)	54年度	3.1	0.0	242.3	198.2	668	0.5
			3.1		44.1		
	50年度	1.3	0.0	151.4	129.2		
			1.3		22.2		
大日本スクリーン製造 (45)	54年度	—	—	37.0	34.3	4.778	— ニックティング・コントロール・シ ステム
			—		2.7		(46)
	50年度	—	—	46.2	44.6		
			—		1.6		
日本電装 (47)	54年度	361.5	—	864.0	—	52.638	0.7
	50年度	93.1	—	501.3	—		
富士通ファナック (48)	54年度	0.01	—	0.2	—	15.827	0
	50年度	—	—	—	—		
山武ハネウエル (49)	54年度	20.1	18.6	101.6	100.4	4.400	0.5 自動弁製造技術 11.0
			1.4		1.1		(50)
	50年度	6.1	5.3	200.0	199.8		
			0.7		0.2		
日本発条 (51)	54年度	—	—	22.3	—	3.925	— タイ、フィリピン向けのバネ製造
			—		—		(52) ノウハウ
	50年度	—	—	4.9	—		
日本冶金工業 (53)	54年度	5.0	0	142.0	140.0	7.371	0.1
			5.0		2.0		
	50年度	230.0	228.0	120.0	119.5		
			2.0		0.5		
日立金属 (54)	54年度	70.0	68.5	148.7	131.5	15.916	0.4
			1.4		17.1		
	50年度	24.4	18.0	121.7	114.2		
			6.4		7.5		

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社名	技術料収入 (百万円)	対海外 対国内	技術料支払い (百万円)	対海外 対国内	54年度の 経常利益 (百万円)	技術料収入の 収益寄与率 (%)	54年度の主要提供技術と 技術料収入(百万円)
日本ステンレス (55)	54年度	---	12.0	12.0	4,282	---	
	50年度	---	5.6	5.6			
住友電気工業 (56)	54年度	127.0 59.0	803.0	732.0	12,523	1.0	
		68.0		71.0			
	50年度	53.0 41.0	511.0	499.0			
		12.0		12.0			
日本化薬 (57)	54年度	157.7 142.1	475.7	33.7	9,760	1.6	アクロレイン 131.4
		15.6		442.0		(58)	アクリル酸技術供与
	50年度	147.4 52.1	447.5	105.7			
		95.3		341.8			
三井東圧化学 (59)	54年度	3611.3 1213.1	2028.5	---	9,793	36.9	塩ビモノマー製造技術 1709.0
		2398.2		---		(60)	ソ連アンモニア製造技術など
	50年度	2442.5 2258.1	996.9	---			
		184.4		---			
東洋インキ製造 (61)	54年度	50.6 21.5	23.9	15.4	9,270	0.5	---
		29.0		8.4			
	50年度	57.3	28.6	---			
日本ゼオン (62)	54年度	2089.4 1275.7	11.9	3.7	5,497	38.0	
		813.6		8.2			
	50年度	1625.5 1101.4	87.2	0			
		524.1		87.2			
岡本理研ゴム (63)	54年度	0.5	89.2	89.2	4,079	0.01	原料費用新薬権使用料 0.5
		0.5		---		(64)	
	50年度	0.6 0.6	16.6	16.6			
富山化学工業 (65)	54年度	1852.5 1552.5	---	---	1,728	107.2	新抗生物質（ペントシリン）の特許1852.5
		300.0		---		(66)	の実施権
	50年度	72.8 72.8	---	---			
武田薬品工業 (67)	54年度	36700.0	50300.0	---	48,807	75.2	
	50年度	19600.0	17300.0	---			
藤沢薬品工業 (68)	54年度	1759 1210.0	3073.0	2938.0	30,724	5.7	セファロsporin系抗生物質に関する1596.0
		549.0		137.0		(69)	のロイヤリティ収入
	50年度	751 700.0	1786.0	1716.0			
		51.0		70.0			
三養化成工業 (70)	54年度	1267.0 1107.0	1741.0	1604.0	18,406	6.9	果糖分離技術
		160.0		136.0		(71)	
	50年度	1299.0 1100.0	2124.0	1858.0			
		199.0		266.0			
住友化学工業 (72)	54年度	1039.0 1002.0	520.0	---	25,024	4.2	
		37.0		---			
	50年度	926.0 410.0	684.0	---			
		516.0		---			
日オ能化化学工業 (73)	54年度	1034.5 1029.7	7.6	7.6	6,187	16.7	中華人民共和国、アクリル酸、ア
		4.8		---		(74)	クリル酸エステルなど製造技術実施権許諾
	50年度	214.4 208.5	5.5	5.5			
		5.9		---			
富士写真フィルム (75)	54年度	666.2	---	---	24,394	2.7	ゼラチンの硬化組成物に関する技術
		---		---		(76)	
	50年度	440.3	---	---			

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	(百万円)	対国内	(百万円)	対国内	(百万円)	(%)	(%)		
日本製薬	54年度	4.8	4.5	29.1	24.1	7,105	0.07	酸素製造装置の運転、保守に関する	3.3
(77)	50年度	5.0	0.2	122.0	5.0		(78)	技術指導(シンガポール大衆鋼鉄向け)	
東レ	54年度	1994.0	1994.0			32,032	6.2		
(79)	50年度	1056.0	1056.0						
味の素	54年度	2019.0				21,836	9.2		
(80)	50年度	1186.0							
花王石鹼	54年度	203.6		25.0		8,835	2.3	シベリア洗剤プラント技術	150.0
(81)	50年度	60.3		10.0				(82)	
旭硝子	54年度	1300.0	1100.0	1900.0	1900	33,311	3.9	旭式板硝子引き上げ法、イオン交換	
(83)	50年度	400.0	200.0	1800.0	1800		(84)	膜電解法技術	
大正製薬	54年度	244.2	244.2	107.3	0	23,450	1.0	活性ビタミンB ₁₂ 剤の製造に関する特	242.5
(85)	50年度	153.7	153.7	124.7	0		(86)	許実施権の供与、リポビタンの製造	
三菱油化	54年度	717.0	593.0	498	488	11,607	6.2	技術に関するノウハウの提供、独占	
(87)	50年度	289	212.0	706	704		(88)	的製造販売機の供与	
エーザイ	54年度	74.8	19.7	0	0	15,577	0.3	ポリプロピレン軸延伸フィルム製造	
(89)	50年度	47.1	38.6	0	0		(90)	に関するノウハウ	
資生堂	54年度	35.4	0	0	0	2,447	1.4		
(91)	50年度	4.2	0	0	0				
十條製紙	54年度	8.5	0	591.9	587.9	3,398	0.3		
(92)	50年度	0	8.5	412.3	412.3				
本州製紙	54年度	483.2	425.6	55.8	54.8	533	90.7	紙ならびにパルプの製造技術	194.9
(93)	50年度	135.0	57.6	16.7	16.7		(94)		
清水建設	54年度	93.3	0	2.1	2.1	21,666	0.4	工場有害排ガス等)に関する技術	18.7
(95)	50年度	26.3	0	15.4	15.4		(96)		
日本工営	54年度	16465.0	7738.5			2,834	581.0	電源開発、河川開発、農業用水等の	
(97)	50年度	8964.0	8726.5				(98)	コンサルティング料	
大成建設	54年度	240	27	106	37	19,016	1.3	ウォールコート(防水剤)	21.0
(99)	50年度	150	0	95	13		(100)	フォーミックス(セメント気泡剤)	

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Key:

1. Company name
2. Royalty income (in million yen)
3. Overseas; domestic
4. Royalty payment (in million yen)
5. JFY 1979 recurring profit
6. Contribution rate of royalty income to the [company's] earning (%)
7. Major technology provided and royalty income earned in JFY 1979 (in million yen)
8. Sumitomo Metal Industries, Ltd.
9. JFY 1979
10. JFY 1975
11. U.S. Steel, Baytown, technical assistance
Lone Star Steel, technical assistance
12. Nippon Kokan K.K.
13. Cold-rolling technology provided to Saab AB, Sweden
14. Japan Steel Works, Ltd.
15. Royalty on manufacturing process of towers/tanks and cast steel products
16. Kawasaki Steel Corporation
17. Technology to change slab width during continuous casting to Conecast Co., U.S.
18. Nippon Steel Corporation
19. Engineering and operation technology of continuous casting equipment to Cockerill, S.A.
20. Kobe Steel Works, Ltd.
21. Steel-bar rolling plant
22. Yokogawa Electric Works Co., Ltd.

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23. Automation measuring instrument
24. Nisshin Electric Co., Ltd.
25. Hitachi Machinery Co., Ltd.
26. Technical export of all-purpose machine tools
27. Japan Organo Co., Ltd.
28. Nitto Denki Kogyo [Nitto Electric Ind., Ltd.]
29. Daifuku Machinery Works, Ltd.
30. Technical assistance fee for conveyer assembly
31. Hitachi Maxsell
32. Royalty for trademark Maxsell
33. Sanyo Electric Co., Ltd.
34. Lithium battery technology supply (to Varta, West Germany)
35. Hitachi, Ltd.
36. Lithium battery technology to PCI in U.S. (Power Conversion, Inc.)
37. Tokyo Sanyo Electric Co., Ltd.
38. Semiconductor equipment
39. Oki Electric Industry Co., Ltd.
40. Canon Camera Co., Inc.
41. Aiwa Co., Ltd.
42. Cassete tape recorder-related technology (radiocassettes, car stereos, decks, etc.)
43. Olympus Optical Co., Ltd.
44. Hokushin Electric Works, Ltd.
45. Dainippon Screen Manufacturing Co.
46. Knitting control system
47. Nippon Denso Co., Ltd.

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48. Fujitsu-Fanac
49. Yamatake-Honeywell Co., Ltd.
50. Automatic valve manufacturing technology
51. NHK Spring Co., Ltd.
52. Spring manufacturing know-how to Thailand and Philippines
53. Nippon Yakin Kogyo Co., Ltd.
54. Hitachi Metal Industries, Ltd.
55. Nippon Stainless Steel Co., Ltd.
56. Sumitomo Electric Industries, Ltd.
57. Nippon Kayaku K.K.
58. Acrolein; acrylic acid technology export
59. Mitsui Toatsu Chemicals, Inc.
60. Vinyl chloride monomer manufacturing technology; Russian ammonia manufacturing technology, etc.
61. Toyo Ink Mfg. Co., Ltd.
62. Japanese Geon Co., Ltd.
63. Okamoto Riken Rubber Co., Ltd.
64. Utility model royalty for footwear
65. Fuji Kagaku Kogyo [Fuji Chemical Ind., Ltd.]
66. Right to use patent on new antibiotic (pentocillin)
67. Takeda Chemical Ind., Ltd.
68. Fujisawa Pharmaceutical Co., Ltd.
69. Royalty income related to cephalosporin group antibiotics
70. Mitsubishi Kasei Kogyo [Mitsubishi Chem. Ind., Co., Ltd.]
71. Fructose separation technology
72. Sumitomo Chemical Co., Ltd.
73. Japan Catalytic Chemical Industry Co., Ltd.

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74. Consent the right to use manufacturing technology of acrylic acid, acrylic acid esters to the People's Republic of China
75. Fuji Film Co., Ltd.
76. Technology related to congealing component of gelatine
77. Japan Oxygen Co., Ltd.
78. Technical guidance related to operation and maintenance of oxygen manufacturing equipment (for Daiei Kotetsu in Singapore)
79. Toyo Rayon Co., Ltd.
80. Ajinomoto Co., Inc.
81. Kao Soap Co., Ltd.
82. Detergent plant technology in Siberia
83. Asahi Glass Co., Ltd.
84. Asahi-type plate glass expanding method, ion exchange membrane electrolysis technique
85. Taisho Seiyaku [Taisho Pharmaceutical Co., Ltd.]
86. Provided the right to use the patent on activated vitamin B₁ drugs. Provided know-how related to Lipovitan manufacturing process; provided exclusive manufacturing vending machines.
87. Mitsubishi Petrochemical Co., Ltd.
88. Know-how related to manufacturing axially elongated polypropylene film
89. Eizai Co., Ltd.
90. Two patent royalty cases
91. Takara Shuzo Co., Ltd.
92. Jujo Paper Mfg. Co., Ltd.
93. Honshu Paper Mfg. Co., Ltd.
94. Paper and pulp manufacturing technology
95. Shimizu Construction Co., Ltd.
96. Technology related to Shimizu air cleaning (odors, SO_x, NO_x, harmful factory exhaust, etc.)

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- 97. Nippon Koei [Nippon Industries Corporation]
- 98. Consulting fee for power source development, river development, and agricultural water, etc.
- 99. Taisei Construction Co., Ltd.
- 100. Wall coating (waterproofing agent); Foamix (cement foaming agent)

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Japanese Patent System

Tokyo NIHON KEIZAI SHIMBUN in Japanese 1 Sep 79 p 3

[Text] International Patent Classification

As we face the era of internationalization of the industrial proprietorship system, countermeasures to cope with it are urged in Japan, also. As one of the measures, the classification for using patent and utility models will be converted from the conventional Japanese patent classification (JPC) to the international patent classification (IPC) beginning in January next year [1980].

Therefore, in order to avoid the confusion associated with the IPC conversion, the Invention Association is proceeding with the PICS plan. The object of this plan is to clearly indicate to the users of the patent journals published by the Invention Association the corresponding fields for the subject fields they have been purchasing based on the conventional IPC, and to present the patent information smoothly after changing to the IPC. Thus far, the situation is that an understanding by the technical personnel of the firms has been obtained, but the important managerial groups are difficult to convince.

Enormous Amount of Patent Information

Japanese patent information is published by the Patent Agency in the form of patent journals and utility model publications, and the journals published in 1978 contained information for a total of approximately 420,000 cases. The amount of information increases severalfold when journals published in foreign countries are included. If a person has to check all the journals one after another to find the necessary technical information in them, the work involved is enormous. Thus, a classification for searching for the necessary information in a short time plays an important role.

There are two types of patent classifications. One of them is called use-related classifications; this is a classification method based on the uses of various technologies in specific applications. For example, it is a way to classify by categorizing first the entire technology by industry, by the line of work involved in the industry, and by the process of manufacture of the products.

The other type is a function-related classification; this is a classification method without regard to the application of individual techniques. It is based instead on the functions those techniques fulfill. In this classification,

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for example, the mixing of cement and gravel or the mixing of eggs and flour would be grouped with "mixing" as the common function.

In countries where patent systems have been established, patent classifications are formulated individually and the patent information is classified accordingly in the country of origin. Patent classes were formulated in the United States in 1831, in Germany in 1877, and in England in 1880. In Japan, the patent class table was prepared in 1885 (18th year of the Meiji Era) at the time of the enactment of the Patent Law. Today's IPC is the result of the drastic postwar revision of the above table in 1948.

Japan's Classification Is Use-Related

The JPC is based on classification by industry. The form of classification begins with cases related to agriculture and proceeds gradually to those in industrial fields with higher degrees of processing. As a whole, it develops around use-related divisions, and technologies related to a specific industry or a specific use are grouped together. This is advantageous when you are searching for techniques related to your own.

However, with the advance of technology to today's level of complication, the function of a certain technology in many cases becomes applicable in various industrial fields. IC (integrated circuit) and LSI (large-scale integration), whose birthplace is the electronic field, are being used in various industrial fields. Patent information concerning such technology is difficult to classify into all fields where the technology is applicable. Consequently, situations arise when the information included in the journals of the industrial field related to yours alone is insufficient.

On the other hand, as the Patent Cooperation Treaty (PCT) became effective and applications to and from other countries have increased, we cannot avoid using the patent information of other countries. However, since various countries use their own patent classification, one must be thoroughly knowledgeable of the patent classification system of the various countries in order to study the patent information of those other countries. Therefore, it was natural to hear voices calling for the various countries in the world to adopt an internationally unified patent classification. The movement began in the European countries. In 1954, a "European Treaty on International Classification of Patents" was concluded at the European conference, and the prototype of the IPC (first edition) was formulated. In order to broaden this from the European frame to a worldwide scale, the "Strasbourg Convention on International Patent Classification" was adopted in 1971, and the second edition of the IPC became effective in 1975.

Since the subject matter of patent classification is the ever-advancing technology, it is necessary to revise it to accommodate the advances being made. Therefore, the IPC is to be revised every five years; the third edition will take effect in January 1980. Japan's intention is to change to the IPC when the third edition takes effect.

Various degrees of confusion are expected to occur during the transition period of conversion to the IPC. To prevent this occurrence, the Invention Association

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is proceeding with the PICS plan and has begun user guidance. Large firms have management divisions for patents and technology, but medium and small businesses will probably require some sort of guidance until they become accustomed to the IPC.

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ECONOMIC

BRIEFS

SHANDONG COAL PRODUCTION SHARING--Tokyo, 15 Dec (JIJI PRESS)--China's Shandong Province has proposed a production-sharing formula for coal exports to users in Yamaguchi Prefecture, western Japan, the proposal was made to a Japanese team, recently sent to the Chinese province by eight major enterprises in Yamaguchi prefecture, including Chugoku Electric Power Co, Ube Industries, Ltd and Tokuyama Soda Co. Under the proposed formula, the Shandong Provincial Government will get a credit from the Japanese coal users for the planned development of Fucun and Quzhen mines. The Japanese users will receive payment in the form of coal to be turned out at the mines. The Fucun mine has a recoverable deposit of 730 million tons of high-calorie, low-sulfur coal and the Quzhen mine 140 million tons. The Chinese plan to produce 3 million tons a year at the Fucun mine and 1.2 million tons at the Quzhen mine. China has also proposed that the coal trade be conducted outside the bounds of a Sino-Japanese long-term trade agreement signed in Beijing in 1978. The Japanese users will discuss the Chinese conditions and make their reply possibly next January. [Text] [Tokyo JIJI in English 1443 GMT 15 Dec 80]

LOAN TO BANGLADESH--Tokyo, 15 Dec (JIJI PRESS)--Japan has extended a 6.6 billion-yen (about 33 million dollars) loan to Bangladesh to help finance its Bakhrrabad natural gas development project. Notes to this effect were exchanged in Dacca Monday between Japanese Ambassador to Bangladesh Hirohiko Otsuka and M. Ali, joint secretary, External Resources Division, Ministry of Finance. The extension of the loan through the governmental overseas economic cooperation fund is based on Bangladesh President Ziaur Rahman's request, which was made during his visit to Japan in April 1978. The project calls for carrying natural gas found in the Bakhrrabad region by pipelines to a fertilizer plant and other facilities in Chittagong. The Japanese loan will be used to procure necessary goods and services for sinking gas wells and constructing production facilities. The credit, an untied loan for a less developed country (LDC), is repayable over 30 years, including 10 years' grace, at an annual interest rate of 1.25 percent. This has boosted to approximately 155.9 billion yen (about 779.5 million dollars) the total amount of Japanese loans to Bangladesh. The first yen loan to the republic was supplied in 1974. [Text] [Tokyo JIJI in English 1439 GMT 15 Dec 80]

YEN LOAN TO THAILAND--Tokyo, 12 Dec (JIJI PRESS)--The governmental overseas cooperation fund Friday signed a contract with Thailand to provide 15,835 million yen (about \$79 million) in loan for a Bangkok international airport expansion project. The credit carries an annual interest of 3 percent with repayment spread over 30 years, including a 10-year grace. [Text] [Tokyo JIJI in English 1306 GMT 12 Dec 80]

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PRC BUSINESS COOPERATION AGREEMENT--Tokyo, 9 Dec (JIJI PRESS)--Dai-Ichi Kangyo Bank (DKB), the nation's largest city bank, has signed a business cooperation agreement with China International Trust and Investment Corp (CITIC) in Beijing, it was announced Tuesday. The agreement calls for mutual arrangement of 1) Japan-China joint ventures, 2) compensation trade (Japan's exports of materials, machinery and technologies to China with payment to be made in products) and 3) technical interchanges. The Japanese bank will also help CITIC raise and operate funds. The bank is expected to sign similar agreements with Beijing General Economic Construction Corp and Tianjin International Trust and Investment Corp before long. [Text] [OW101211 Tokyo JIJI in English 1331 GMT 9 Dec 80]

NORMALIZE TIES WITH IRAQ--Despite the continuing Iran-Iraq war, Japanese companies are now moving vigorously to normalize trade with Iraq and resume various construction projects in that country now brought to a virtual standstill by the war, trade and industrial sources said. The sources said such moves reflect the growing irritation among traders, construction companies, plant equipment makers and other quarters concerned that the vast Iraqi market may fall into hands of their foreign rivals. While their foreign rival companies, especially European firms, are launching vigorous campaigns to sell their goods to Iraq and undertake construction projects, the sources noted, Japanese companies had remained rather "timid" in their attitudes toward the market. Recently, however, Japanese firms have taken measures to resume trade with Iraq and reopen suspended construction projects in that country, partly because Iraqi Government leaders have made it clear that Iraq is determined to continue its economic construction despite the war with Iran, according to the sources. Among the Japanese companies involved, the sources said, Mitsubishi Corp has already dispatched a top executive to Baghdad for talks with Iraqi interests on resumption of eight construction projects in Iraq. As for bilateral trade with Iraq, a total of 44 Japanese trading companies concluded trade contracts worth about 8.1 billion yen at the Baghdad International Trade Fair held in the Iraqi capital last month. [Excerpts] [OW280513 Tokyo THE JAPAN TIMES in English 27 Dec 80 p 5]

PRC COAL LIQUEFACTION PLANT--The Japanese Ministry of International Trade and Industry and the Agency of Industrial Science and Technology plans to build a brown coal liquefaction test plant with a daily capacity of 0.1 ton in Beijing, Anshan, or Taiyuan next year. Japan hopes that this will mark an initial step toward a large-scale Japan-China joint brown coal liquefaction project. Japan recently imported 1.5 tons of brown coal from Huzngxien in Shandong Province, Shengli in Jilin Province, and Huolinhe in Niemongol to conduct a liquefaction test in Japan. However, due to problems arising in transportation, China asked Japan to conduct testing in China. In response to this request, Japan has agreed to build a testing plant in China. [OW190035 Japan NIHON KEIZAI SHIMBUN in Japanese 15 Dec 80 morning edition p 9]

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SCIENCE AND TECHNOLOGY

BRIEFS

SEMICONDUCTOR TECHNOLOGY--The Electronics Technology Research Institute of Tsukuba academic town, under the agency of industrial technology, has succeeded in developing a new technology for bringing about the large-scale integration (LSI) of a gallium arsenic semiconductor, a new element to replace the present silicone semiconductor. A trial product showed that the new semiconductor requires a shorter time for signal processing and consumes about one-tenth of the electricity used by the conventional semiconductor. In the future it will not be a mere dream to make highspeed integrated circuits with only 20 to 30 pico-seconds required for signal processing, more than 10 times faster than the present silicone semiconductor element. Since the gallium arsenic semiconductor element has these advantages over the silicone semiconductor element, it is said to be fit for a high-performance computer element. The Ministry of International Trade and Industry [MITI] plans to promote the development of a super highspeed science-technology computer, beginning in 1981, and the gallium arsenic semiconductor element is cited as a candidate element to be used for it. The new technology developed by the Electronics Technology Research Institute opens the way for the MITI plan. [OW190107 Tokyo NIHON KEIZAI SHIMBUN in Japanese 17 Dec 80 morning edition p 8]

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